

# Effect of Manning Management Implementation and Sailing Safety Knowledge on Occupational Accidents Mediated by Understanding Sailing Safety at PT. X: A Conceptual Model

R Adhimaskin Kusuma Wardani<sup>1</sup>, Dwi Sunu Kanto<sup>2</sup>

<sup>1,2</sup>Department of Management, FEB, Trilogi University, Jakarta, Indonesia

Date of Submission: 10-08-2023

Date of Acceptance: 20-08-2023

**ABSTRACT:** Human-caused maritime accidents can seriously affect ship crews, shipping companies, and the marine environment. Understanding the causes and prevention of accidents is critical for guaranteeing marine safety and security. The effect of manning management implementation and sailing safety knowledge on occupational accidents at PT X, a merchant ship firm, is investigated in this conceptual research. The study considers sailing safety understanding a mediator component in this association. Manning management is concerned with human resource management on board, whereas sailing safety knowledge is involved with crew members' understanding of sailing safety concepts. The study hypothesizes that manning management and sailing safety knowledge directly and favorably affect understanding sailing safety and occupational accidents. A Likert scale questionnaire is used for data collection, and route analysis is used for analysis. The theoretical framework gives insights into increasing marine safety and reducing workplace accidents.

**KEYWORDS:** Conceptual Model, Occupational Accidents, Manning Management, Sailing Safety Knowledge, Understanding Sailing Safety.

## I. INTRODUCTION

According to the Direktorat Jenderal Perhubungan Laut (2017), it is critical to understand the causes and consequences of shipping accidents and the efforts that may be taken to prevent them. Human error is one of the leading causes of shipping accidents. Knowledge

gaps, procedure anomalies, crew tiredness, and erroneous decisions can all contribute to mishaps.

Shipping accidents greatly influence various parties, including ship crews, shipping firms, and the maritime environment. Accidents can also cause environmental damage, such as oil spills or the release of toxic chemicals, which can endanger marine ecosystems and the lives of coastal residents (Utomo, H., 2017). Accidents are also linked to a need for more technical expertise, ship owner comprehension, ship maintenance, communication, and exhaustion (Malisan, 2013). Internal shipping variables such as safety equipment, ship raw material quality, and ship manning are vital in enhancing service users' confidence in shipping services (Malisan&Puriningsih, 2019). A good navigational safety understanding of these issues enables the ship's crew to anticipate potential hazards, respond swiftly to emergencies, and take appropriate action to safeguard themselves and their colleagues (Guevara & Dalaklis, 2021).

Accident data from merchant ship sailors PT. X from 2020 to 2022 reveals a rising pattern of mishaps. According to PT. X, accidents involving merchant ship sailors will rise in 2021 and 2022. In 2020, 15 incidents were recorded, rising to 21 accidents in 2021 and reaching a peak of 24 in 2022. Based on this information, it is possible to see the number of accidents encountered by sailors on commercial ships PT. X fluctuated during the observation period. These variations show the presence of several factors affecting shipping safety. Furthermore, additional factors such as manning management application, knowledge of

shipping safety, and awareness of shipping safety all exhibited a negative trend during the observation period.

Based on the research backdrop and data collected, this conceptual paper will investigate the effect of manning management and shipping safety knowledge on occupational accidents by taking the role of a mediator into account when understanding shipping safety.

## II. LITERATURE REVIEW

### 1. MANNING MANAGEMENT IMPLEMENTATION

George R. Terry, as quoted by Kosasih (2007), defines management as the achievement of goals via the efforts of others. Manning management is a key component in improving shipping safety in the maritime industry. This management focuses on managing human resources (HR) on board, including crew planning, management, and supervision. Manning management seeks to guarantee that the ship has the proper quantity, qualifications, and availability of personnel to carry out operational activities and cope with various scenarios on trips safely and efficiently (Riyadi S. et al., 2019). In the corporate setting, the management system is organized into five major areas: marketing, production, accounting, finance, and human resources (HR).

Several items are explained in Chapter XIV General Provisions Article 261 of RI Law No. 17 of 2008. First, it is mentioned in paragraph 1 that the organization and development of human resources in the field of shipping is carried out to deliver professional, competent, disciplined, and accountable human resources that satisfy national and international standards. Second, in paragraph 4, it is mentioned that human resources in the sphere of shipping comprise transportation in seas, ports, shipping safety and security, and marine protection.

Management is influenced by a variety of elements. First, recruiting, as defined by Henry Simamora (2006), is a sequence of activities designed to locate and attract people with the motivation, abilities, skills, and knowledge required to overcome inadequacies identified in staffing planning.

The second consideration is positioning. Manpower placement is an effort to place employees in positions that match their qualifications, skills, talents, interests, and abilities while also considering human rights and legal protection, as provided in Article 32 of Law Number 13 of 2003 Concerning Manpower. Proper work can boost employee satisfaction, motivation, and overall corporate performance (Sjahruddin,

2023). A careful and selective placement procedure will guarantee that personnel is placed in positions appropriate for their abilities, allowing them to contribute the most to achieving corporate goals (Khotimah, 2019).

Finally, there is monitoring. According to Manulang (2008), supervision is a process that includes assessing, evaluating, and correcting work to ensure that it adheres to the original plan. Meanwhile, Mary (2008) defines supervision as a process of controlling and assessing the seamless execution of operations according to plan. According to Sayles (in Siagian, 2005), there are four key reasons why supervision is required in an organization:

- Assuring outsiders that the organization is in good working order.
- Assure managers/leaders that their organization is following the desired direction and goals.
- Allows a leader to direct subordinates or personnel.
- Provide guidance and direction to lower-level managers or leaders from higher-level managers.

Manning management is a key component in improving shipping safety in the maritime industry. Previous research has identified several relevant indicators in manning management:

- The ratio compares the actual number of crew members and the number anticipated or required for ship operations.
- Personnel qualification refers to the crew's abilities, knowledge, and skills in performing their jobs on board.
- Personnel availability refers to the number of crew members available to service by the shipping schedule.
- Rest and recovery time. Ensuring adequate rest time for the crew is critical in reducing the danger of weariness and maintaining alertness and focus during the voyage.

### 2. SAILING SAFETY KNOWLEDGE

Knowledge, as defined by Notoatmodjo (2010), is the product of the human activity of recognizing an item as having a certain quality. A variety of factors, including formal and non-formal schooling, can influence one's level of knowledge. Knowledge is influenced by various factors, including formal and non-formal education. Therefore, there is a close relationship between knowledge and one's education, where the higher the level of education, the more comprehensive the knowledge. It should be noted that a person's low

level of education does not necessarily indicate a low level of knowledge because knowledge can be obtained through formal and non-formal education.

An understanding founded on sufficient information is an essential component in the context of the relationship between the ship crew's knowledge and the shipping's safety and security. Extensive and accurate knowledge of shipping safety and security principles will enable the crew to become effective mediators in maintaining shipping security and safety. The crew can provide education and maintain the compliance of all relevant parties with the set safety standards if they have a solid grasp of the risks involved and the proper actions to take in response to those risks.

According to Notoatmodjo (2010), an individual's degree of knowledge can be influenced by several different circumstances, including the following:

- Education
- Experience
- Belief
- Socio-Cultural

Notoatmodjo (2007) asserts that human knowledge can be categorized into six categories: know, comprehension, applications, analysis, synthesis, and evaluation.

### 3. UNDERSTANDING OF SHIPPING SAFETY

Sudaryono (2012) defines understanding as the ability of a person to get meaning and knowledge of the information being studied by analyzing the major substance of the reading or changing data into various forms. Daryanto (2007) also explains that understanding is an ability emphasized in teaching and learning. Students are required to understand what is being taught, understand what is being communicated, and be able to use this information without having to relate it to other things. According to Ali (2021), several factors can affect a person's understanding of some information or object, namely knowledge, previous experiences, economic, social/environmental, and information.

As indicated by Faridah and Fajarwati (2022), to carry out their tasks properly, crew members must be thoroughly aware of areas of maritime safety and security. To assess the crew's understanding of shipping safety and security, indicators are needed that can be used as a reference. This indicator is important to measure the extent of understanding of the ship's crew in carrying out their role as authority holders at the port.

Following what has been stipulated in Undang-Undang Nomor 17 in 2008 about Shipping, several indicators can be used in understanding shipping:

- Understanding of safety regulations and procedures
- Understanding of risk and hazard assessment
- Understanding of the application of technology and innovation in the field of shipping.

### 4. COMPENSATION STYLES

Accidents are unpredictable because they frequently result in material loss or serious injury (Ridho, 2015). Occupational accidents, according to Notoatmodjo and Soekidjo (2007), are events that occur as a result of work activities in a company. Accidents are unanticipated events that can harm individuals, businesses, communities, and the environment.

Several steps must be taken to prevent an accident from occurring, including investigating the causes of the accident, identifying hazards that have the potential to cause accidents and losses, and correcting the causes, all of which are important steps to prevent accidents from occurring and the recurrence of similar incidents (Suma'mur, 2015). According to Aswadi (2016), it is critical to be cautious in reducing and minimizing the risk of accidents related to employee operational tasks.

According to Budiono et al. (2008), four factors can be classified as causes of workplace accidents:

- Human factors, such as dislocation as a result of insufficient skills or knowledge.
- Material considerations, such as the use of non-standard materials.
- Danger factors or danger sources, such as dangerous behavior and hazardous conditions
- The lack of care or maintenance of work-related machines/equipment.

The following are some important indicators to consider when calculating the number of workplace accidents, according to several studies (Darwis, et al., 2020; SC RE, 2013; &Hadiyanti&Setiawardani, 2017):

- Accident frequency; the greater the number of accidents, the greater the risks and potential hazards in the workplace.
- The level of loss or injury suffered by workers as a result of the accident is reflected in the severity of the accident.
- The rate of absenteeism due to injury quantifies the number of working days lost due to worker injuries.

### III. CONCEPTUAL MODEL

Based on a comprehensive review of the literature and prior research, it is hypothesized that the utilization of manning management and knowledge pertaining to shipping safety can be regarded as independent variables, whereas comprehension of

shipping safety is posited as a mediating variable. Meanwhile, work-related accidents shall be regarded as the dependent variable. There-fore, this paper is able to develop a conceptual model as depicted in Figure 1.

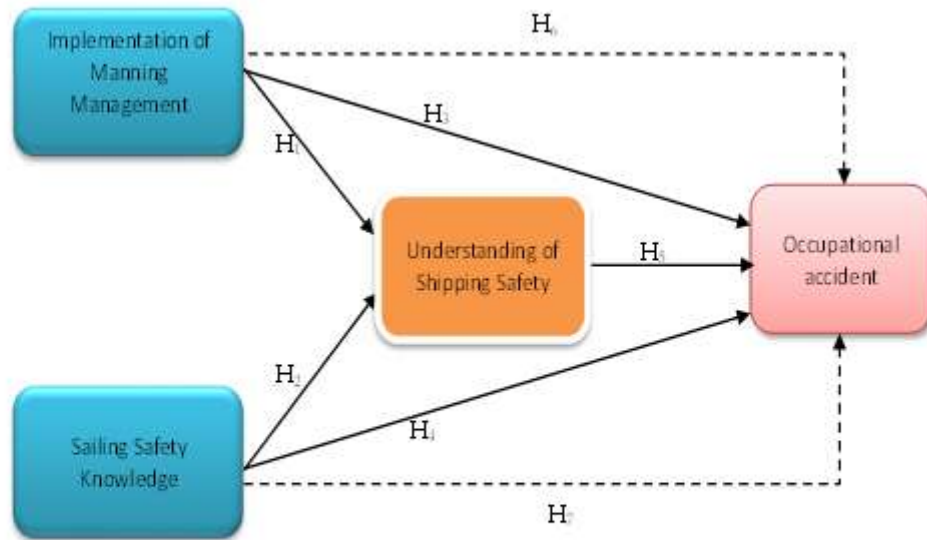


Figure 1. The Conceptual Model

Description:  
 —————> : Direct Effect  
 - - - - -> : Indirect Effect (Mediated)

### IV. HYPOTHESES

The researchers formulated hypotheses by analyzing the observed phenomena and the relationships among the variables under investigation. The present study provides data supporting the concept that variables related to personnel management and knowledge of safe sailing practices are believed to impact work-related accidents and the comprehension of safety measures in the shipping industry. Based on the conceptual model depicted in Figure 1, a total of seven hypotheses were formulated in the following manner:

- H1: The implementation of Manning Management has a direct positive and significant effect on Understanding Maritime Safety.
- H2: Sailing Safety Knowledge has a direct positive and significant effect on Sailing Safety Understanding.
- H3: Understanding Shipping Safety directly has a positive and significant effect on Occupational Accidents.

- H4: Implementation of Manning Management has a direct positive and significant effect on Occupational accidents.
- H5: Knowledge of Shipping Safety has a direct positive and significant effect on Occupational accidents.
- H6: Understanding of Shipping Safety plays a role as a variable that mediates the relationship between the Implementation of Manning Management and Occupational accidents.
- H7: Understanding Sailing Safety is a variable mediating the relationship between Sailing Safety Knowledge and Occupational Accidents.

### V. METHODOLOGY

The data for this study was collected quantitatively using predetermined standards and measurements. The population studied in this study was the crew of the PT X ship, with a total sample of 55 crew members of the PT X merchant ship in 2023. The questionnaire method was used to collect data in this study, and it was distributed to respondents who were PT X crew members. In

response to the questions on the questionnaire, a Likert scale with a score of 1-5 was used. Data collection will be validated using research instruments such as validity and data reliability tests before being analyzed using path analysis techniques.

## VI. CONCLUSION

The purpose of this study was to construct a theoretical framework for examining the impact of manning management implementation and sailing safety knowledge on occupational accidents at PT X. The study aimed to explore sailing safety as a mediating variable in this relationship. This paper comprehensively examines the research background, literature review, conceptual models, hypotheses formulation, and research methods about the impact of manning management implementation and sailing safety knowledge on occupational accidents. This paper aims to analyze the relationship between manning management, sailing safety knowledge, understanding of sailing safety, and occupational accidents as mediators.

## REFERENCES

- [1]. Ali, Z. (2021). Metode penelitian hukum. Sinar Grafika.
- [2]. Aswadi. (2016). Analisis Faktor-Faktor yang Mempengaruhi Kecelakaan Kerja Karyawan Bagian Drilling pada PT. saripari Pertiwi Abadi (SPA) Mandau Kabupaten Bengkalis. Pekanbaru: Fakultas Ekonomi Dan Ilmu Kecamatan Sosial UIN Sultan Syarif Kasim.
- [3]. Baradero, M. (2008). Klien Gangguan Kardiovaskuler. Jakarta: EGC.
- [4]. Budiono, A. M. S., Jusuf, R. M., & Pusparini, A. (2008). Bunga Rampai Higiene Perusahaan Ergonomi (HIPERKES) dan Kesehatan dan Keselamatan Kerja. Badan Penerbit Universitas Diponegoro.
- [5]. Darwis, A. M., dkk. (2020). Kejadian Kecelakaan Kerja Di Industri.
- [6]. Daryanto. (2007). Evaluasi Pendidikan. Jakarta: Rineka Cipta.
- [7]. Direktorat Jenderal Perhubungan Laut. (2017). Pentingnya Petugas Pandu Dalam Memastikan keselamatan pelayaran. Portal Hubla Direktorat Jenderal Perhubungan Laut. <https://hubla.dephub.go.id/home/post/read/4968/pentingnya-petugas-pandu-dalam-memastikan-keselamatan-pelayaran-09-10-2>
- [8]. Faridah, H., & Fajarwati, R. A. (2022). Pengawasan Transportasi Laut demi Mewujudkan Keselamatan dan Keamanan Pelayaran Nasional. In Jurnal Keamanan Nasional (Vol. 8, Issue 2, pp. 396–407). Universitas Bhayangkara Jakarta Raya. <https://doi.org/10.31599/jkn.v8i2.558>.
- [9]. Guevara, D. P., & Dalaklis, D. (2021). Understanding the Interrelation between the Safety of Life at Sea Convention and Certain IMO's Codes.
- [10]. Hadiyanti, R., & Setiawardani, M. (2017). Pengaruh Pelaksanaan Program Keselamatan dan Kesehatan.
- [11]. Khotimah, K. (2019). Faktor-Faktor Yang Mempengaruhi Implementasi Peraturan Daerah Nomor 8 Tahun 2017 Tentang Perlindungan Dan Penempatan Tenaga Kerja Lokal Terhadap Perusahaan Yang Tidak Mempekerjakan Pekerja Lokal Di Kabupaten Penajam Paser Utara.
- [12]. Komite Nasional Keselamatan Transportasi. (2023). Laporan Statistik Investigasi Kecelakaan Transportasi 2022.
- [13]. Kosasih, E. (2007). Manajemen Perusahaan Pelayaran: Suatu Pendekatan Praktis dalam Bidang Usaha Pelayaran. Jakarta: Raja Grafindo Persada.
- [14]. Malisan, J. (2013). Kajian Pengawakan Kapal Tonase Kurang Dari GT 7 Pada Wilayah Perairan Pedalaman Dalam Meningkatkan Keselamatan Pelayaran, Studi Kasus: Sampit.
- [15]. Malisan, J., & Puriningsih, F.S. (2019). Pemberdayaan Pelayaran Rakyat Untuk Angkutan Antar Pulau Dalam Rangka Pengembangan Wilayah Kepulauan Di Kawasan Timur Indonesia. Warta Penelitian Perhubungan.
- [16]. Manulang, M. (2008). Manajemen Personalia. Yogyakarta: Gadjah Mada University.
- [17]. Notoatmodjo, & Soekidjo. (2007). Promosi Kesehatan dan Ilmu Perilaku. Rineka Cipta.
- [18]. Notoatmodjo, S. (2007). Kesehatan Masyarakat Ilmu dan Seni. Jakarta : Rineka Cipta.
- [19]. Notoatmodjo, S. (2010). Metodologi Penelitian Kesehatan. Jakarta : Rineka Cipta.
- [20]. Ridho, A. (2015). Faktor-Faktor Yang Menyebabkan Kecelakaan Kerja Pada Pekerja Bagian Pengelasan Di Pt. Johan Santosa. Dk, 53(9), 1689–1699.
- [21]. Riyadi S., dkk. (2019). Pengaruh Penerapan Manajemen Kapal Dan Manajemen Armada Terhadap Optimalisasi

- Perusahaan.
- [22]. SC RE. (2013). Keselamatan dan Kesehatan Kerja Sarana untuk Produktivitas. Jakarta: International Labour Organization
  - [23]. Siagian, P. S. (2005). Fungsi-fungsimanajemen. Jakarta: Bumi Aksara.
  - [24]. Simamora, H. (2006). Manajemen Sumber Daya Manusia. Yogyakarta.
  - [25]. Sjahrudin, H., Nugraha, J. P., Nurbakti, R., Yakup, Y., & Jayanto, I. (2023). Influence of Employee Competency and Work Placement Analysis on Increasing Employee Productivity. Quantitative Economics and Management Studies.
  - [26]. Sudaryono. (2012). Dasar-dasar Evaluasi Pembelajaran. Yogyakarta: Graha Ilmu.
  - [27]. Suma'mur. (2015). Higiene Perusahaan dan Kesehatan Kerja (Hiperkes). Sagung Seto
  - [28]. Undang-Undang Nomor 13 Tahun 2003.
  - [29]. Undang-Undang Nomor 17 Tahun 2008 Tentang Pelayaran
  - [30]. Utomo, H. (2017). Siapa yang Bertanggung Jawab Menurut Hukum dalam Kecelakaan Kapal.